

# Chapter 1

## Introduction, Summary, and Conclusions

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# Introduction

On January 11, 1964, Luther L. Terry, M.D., Surgeon General of the United States, released *Smoking and Health: Report of the Advisory Committee of the Surgeon General of the Public Health Service*. This report, written at the request of President John F. Kennedy, was in response to the evidence on smoking and lung cancer that had been accumulating since the 1950s (see Chapter 2, “Fifty Years of Change 1964–2014”). This was the first in the series that is now generally referred to as the Surgeon General’s reports. On the basis of more than 7,000 articles in the biomedical literature relating to smoking and disease that were available at the time, the Advisory Committee concluded that cigarette smoking is:

- Associated with 70% higher all-cause mortality rates among men
- A cause of lung cancer and laryngeal cancer in men
- A probable cause of lung cancer in women
- The most important cause of chronic bronchitis (U.S. Department of Health, Education, and Welfare [USDHEW] 1964).

For several days, the report was the topic of newspaper headlines across the country and lead stories on television newscasts (Parascandola 1997). Later, it was ranked among the top news stories of the 20th century (*USA Today* 1999). The release of that report was one of the first in a series of steps, still being taken 50 years later, to diminish the impact of tobacco use on the health of people worldwide. Ever since, individual citizens, private organizations, public agencies, and elected officials have pursued the Advisory Committee’s call for “appropriate remedial action.”

Early on, in response to the 1964 report, the U.S. Congress passed the *Federal Cigarette Labeling and Advertising Act of 1965* and the *Public Health Cigarette Smoking Act of 1969*. These laws required a health warning on cigarette packages, banned cigarette advertising in the broadcasting media, and called for an annual report on the health consequences of smoking. Since then, there have been several actions at the federal level—the enactment of the *Family Smoking Prevention and Tobacco Control Act* in 2009, and the publication of *Ending the Tobacco Epidemic: A Tobacco Control Strategic Plan for the U.S. Department of Health and Human Services* (USDHHS 2010a).

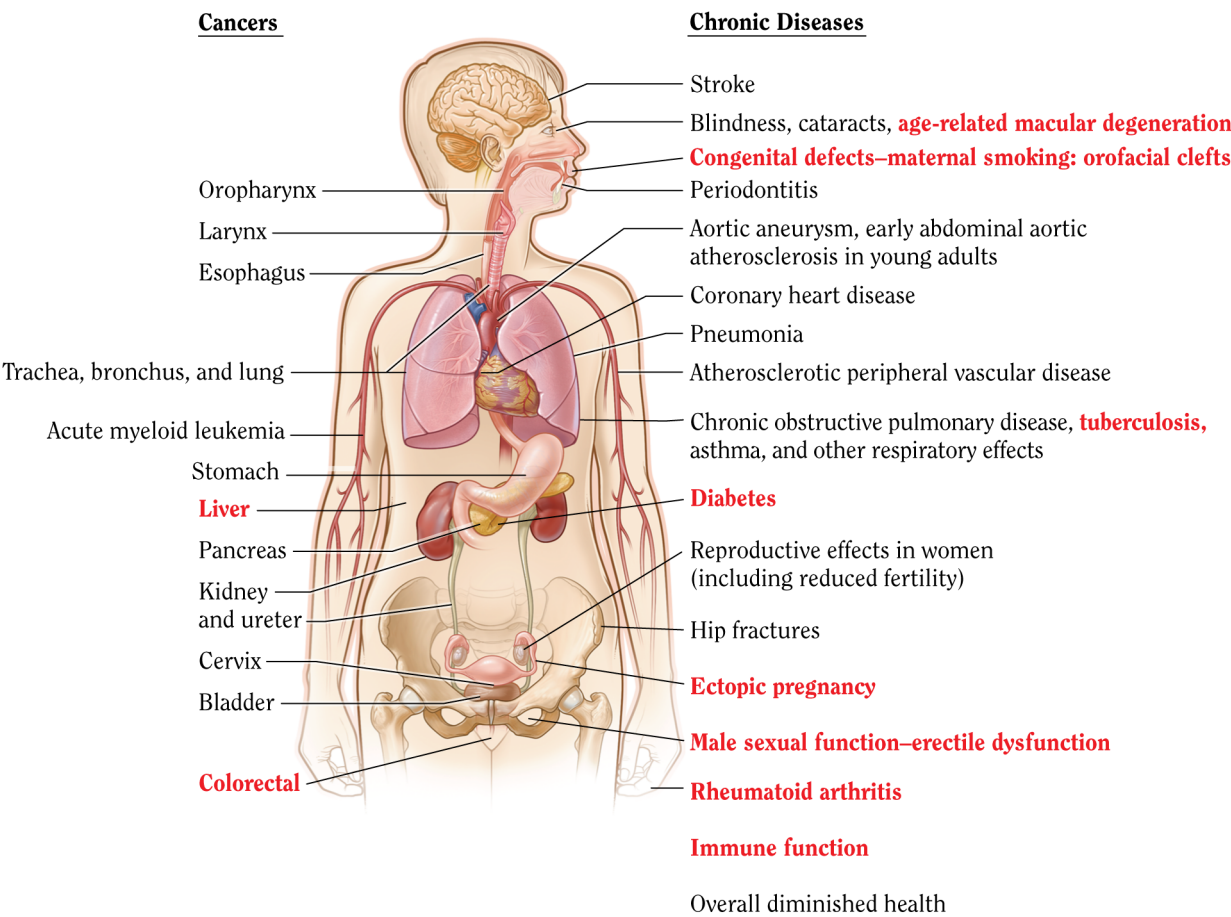
Since that first report in 1964, knowledge of the health consequences of smoking and involuntary exposure to tobacco smoke has expanded dramatically (see Chapter 4, “Advances in Knowledge on the Health Consequences of Smoking: From 1964–2014”). This series of reports has provided definitive syntheses of the evolving evidence on smoking and health. The topics have ranged widely, including comprehensive coverage of the adverse health effects of active smoking and exposure to second-hand smoke (USDHEW 1979; U.S. Department of Health and Human Services [USDHHS] 1986, 2004, 2006), the impact of tobacco control policies (USDHHS 2000), and addiction (USDHHS 1988). A goal of these reports has been to synthesize available evidence to reach conclusions on causality that have public health implications. In reaching conclusions on causation, the reports have followed a model that originated with the 1964 report: compilation of all relevant lines of scientific evidence, critical assessment of the evidence, evaluation of the strength of evidence by using guidelines for evidence evaluation, and a summary conclusion on causation (USDHEW 1964; USDHHS 2004; Table 1.1; Chapter 3, “Producing the Surgeon General’s Report from 1964–2014: Process and Purpose”). The Surgeon General’s reports have established a long list of health consequences and diseases caused by tobacco use and exposure to tobacco smoke (see Chapter 4). Fifty years later, this report documents that our knowledge continues to expand as new causal conclusions are still being added to that long list (Figures 1.1A and 1.1B).

**Table 1.1** Four-level hierarchy for classifying the strength of causal inferences from available evidence

Level 1	Evidence is <b>sufficient</b> to infer a causal relationship
Level 2	Evidence is <b>suggestive but not sufficient</b> to infer a causal relationship
Level 3	Evidence is <b>inadequate</b> to infer the presence or absence of a causal relationship (which encompasses evidence that is sparse, of poor quality, or conflicting)
Level 4	Evidence is <b>suggestive of no causal relationship</b>

Source: U.S. Department of Health and Human Services 2004.

Figure 1.1A The health consequences causally linked to smoking



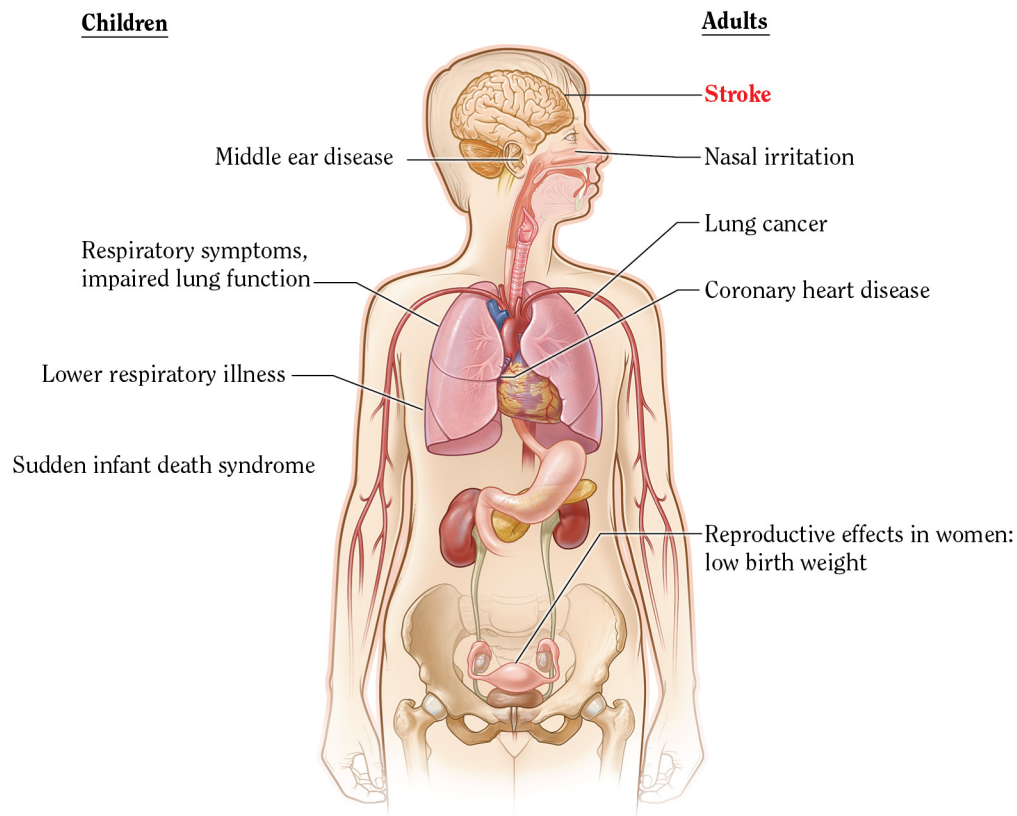
Source: USDHHS 2004, 2006, 2012.  
Note: The condition in **red** is a new disease that has been causally linked to smoking in this report.

## Organization of the Report

This report is divided into three sections. Section 1 “Historical perspective, overview, and conclusions” provides an overall summary of the report and its conclusions. It also provides a summary of the history of this series of reports, moving from their origins in 1964 to the present, contrasting what we knew in 1964 with what we know now in 2014. Section 2 “The Health Consequences of Active and Passive Smoking: The Evidence in 2014” provides a direct link to the 1964 report, which addressed the health effects of active smoking only. The first chapter

in this section gives a 50-year perspective on the identification of the health consequences of active smoking and exposure to secondhand smoke. The other chapters in this section provide updates on critical topics and on topics for which the evidence has advanced, since the previous reviews in the 2004 and 2006 Surgeon General’s reports, *The Health Consequences of Smoking: A Report of the Surgeon General* and *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*, including a brief review of the state of

**Figure 1.1B The health consequences causally linked to exposure to secondhand smoke**



Source: USDHHS 2004, 2006.

Note: The condition in **red** is a new disease that has been causally linked to smoking in this report.

the evidence. Understanding of mechanisms, as laid out in the 2010 report, *How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease*, is also (USDHHS 2010b). Active smoking and exposure to secondhand smoke are covered in the same chapters. Section 3 “Tracking and Ending the Epidemic” includes a descriptive chapter on the patterns of smoking, a chapter on the impact of the tobacco control environment on smoking since 1964, and additional chapters providing estimates of premature deaths that are avoidable.

The final chapter “A Vision for the Ending the Tobacco Epidemic” outlines broad strategies and potential courses of action for tobacco control in the future.

Each section within the chapters on the health consequences of smoking (Chapters 6 – 11) is accompanied by evidence tables detailing the studies that were used to evaluate the evidence to assess causality. A supplement to this report is provided that contains these tables. The tables included in the supplement are indicated with an “S” where they are called out in the text.

## Development of the Report

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The Surgeon General's reports on smoking and health were previously mandated by the Cigarette Smoking Act of 1969, Public Law 91-222, section 8 (a), which required that "The Secretary of Health, Education, and Welfare shall transmit a report to Congress not later than January 1, 1971, and annually thereafter, concerning (A) current information in the health consequences of smoking, and (B) such recommendations for legislation as he may deem appropriate." In addition, recent reports have also satisfied the statutory reporting required by the Comprehensive Smokeless Tobacco Health Education Act of 1986, Public Law 99-252, which required that "The Secretary of Health and Human Services shall transmit a report to Congress no later than January 11, 1987, and biennially thereafter, containing—(1) a description of the effects of health education efforts on the use of smokeless tobacco products, (2) a description of the use by the public of smokeless tobacco products, (3) an evaluation of the health effects of smokeless tobacco products and the identification of areas appropriate for further research, and (4) such recommendation for legislation and administrative action as the Secretary considers appropriate." These statutory requirements were sunsetted in 1999 and an annual report to Congress is no longer required by law.

Initially, the annual reports to Congress on the health consequences of smoking were prepared by the National Clearinghouse for Smoking and Health; however, in 1978 Secretary of Health, Education, and Welfare Joseph Califano established the Office on Smoking and Health in the Office of the Assistant Secretary of Health to coordinate the production of the annual report to Congress that would review not only the biomedical but also the behavioral and control data about smoking and its effects on health. The fifteenth anniversary report (USDHEW 1979) was the first report produced by the Office on Smoking and Health (see Table 3.1 for a full listing of reports from 1964–2012).

Beginning with Dr. Luther L. Terry, each Surgeon General has released the reports to the public and served as the primary spokesperson of the findings. However, the preparation of these reports, starting with the 1964 Advisory Committee, has been conducted with a high degree of independence, in order to protect their scientific integrity. Although the public may assume that the individual Surgeon Generals have been active in the authoring of the reports, their role has remained largely at the level of approving topics and reviewing drafts before the volume is published. Nevertheless, over time, the Office of

the Surgeon General has increasingly become involved in developing the messaging for the public release of the reports. Consistent with a primary duty of the Surgeon General to "Protect and advance the health of the Nation through educating the public, advocating for effective disease prevention and health promotion programs and activities, and, providing a highly recognized symbol of national commitment to protecting and improving the public's health," the Office of the Surgeon General (n.d.) has expanded the range of educational materials supporting the release of the scientific report, particularly the development of a consumer summary which is produced in nontechnical but scientifically valid language.

As shown in Table 3.1, over time the size of the reports has grown, largely due to the increase in scientific literature on the topics reviewed, but also as the scope of topics has grown from those addressed in the initial charge provided by Secretary Califano in 1979 to address the behavioral and tobacco control aspects of the problem. This broader focus is reflected in the 2012 report which reviewed not only the epidemiology, causes, and health effects of tobacco use among youth and young adults, but also the interventions proven to prevent this problem (USDHHS 2012).

This report of the Surgeon General was prepared by the Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, USDHHS. Initial chapters were written between 2010–2011 by 75 experts selected because of their knowledge of, and familiarity with, the topics presented here. These contributions are summarized in 15 chapters, which were evaluated by more than 100 peer reviewers. The entire manuscript was then sent to more than 20 scientists and other experts, who examined it for scientific integrity. After each review cycle, the drafts were revised by the editors on the basis of the reviewers' comments. Subsequently, the report was reviewed by various institutes and agencies within USDHHS. Publication lags, even short ones, prevent an up-to-the-minute inclusion of all recently published articles and data. Therefore, by the time the public reads this report, additional studies or data may have been published.

The methodology for evidence compilation, review, and synthesis draws on the approach of the 1964 Surgeon General's report (USDHEW 1964), as further modified in the 2004 report (USDHHS 2004). That report also refined the methodology for causal inference and set out a classification of strength of evidence for causal inference.



## Scientific Basis of the Report

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The statements and conclusions throughout this report are documented by the citation of studies published in the scientific literature. For the most part, this report cites peer-reviewed journal articles, including reviews that integrate findings from numerous studies, and books by recognized experts. When a study has been accepted for publication, but the publication has not yet been issued,

owing to the delay between acceptance and final publication, the study is referred to as “in press.” This report also refers, on occasion, to unpublished research such as a presentation at a professional meeting or a personal communication from the researcher. These personal references are to acknowledge experts whose research is in progress.

## Major Conclusions from the Report

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1. The century-long epidemic of cigarette smoking has caused an enormous avoidable public health tragedy. Since the first Surgeon General’s report in 1964 more than 20 million premature deaths can be attributed to cigarette smoking.
2. The tobacco epidemic was initiated and has been sustained by the aggressive strategies of the tobacco industry, which has deliberately misled the public on the risks of smoking cigarettes.
3. Since the 1964 Surgeon General’s report, cigarette smoking has been causally linked to diseases of nearly all organs of the body, to diminished health status, and to harm to the fetus. Even 50 years after the first Surgeon General’s report, research continues to newly identify diseases caused by smoking, including such common diseases as diabetes mellitus, rheumatoid arthritis, and colorectal cancer.
4. Exposure to secondhand tobacco smoke has been causally linked to cancer, respiratory, and cardiovascular diseases, and to adverse effects on the health of infants and children.
5. The disease risks from smoking by women have risen sharply over the last 50 years and are now equal to those for men for lung cancer, chronic obstructive pulmonary disease, and cardiovascular diseases.
6. In addition to causing multiple diseases, cigarette smoking has many other adverse effects on the body, such as causing inflammation and impairing immune function.
7. Although cigarette smoking has declined significantly since 1964, very large disparities in tobacco use remain across groups defined by race, ethnicity, educational level, and socioeconomic status and across regions of the country.
8. Since the 1964 Surgeon General’s report, comprehensive tobacco control programs and policies have been proven effective for controlling tobacco use. Further gains can be made with the full, forceful, and sustained use of these measures.
9. The burden of death and disease from tobacco use in the United States is overwhelmingly caused by cigarettes and other combusted tobacco products; rapid elimination of their use will dramatically reduce this burden.
10. For 50 years the Surgeon General’s reports on smoking and health have provided a critical scientific foundation for public health action directed at reducing tobacco use and preventing tobacco-related disease and premature death.

## Chapter Conclusions

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*Note: Chapters 2-4 do not have conclusions.*

### Chapter 5: Nicotine

1. The evidence is sufficient to infer that at high-enough doses nicotine has acute toxicity.
2. The evidence is sufficient to infer that nicotine activates multiple biological pathways through which smoking increases risk for disease.
3. The evidence is sufficient to infer that nicotine exposure during fetal development, a critical window for brain development, has lasting adverse consequences for brain development.
4. The evidence is sufficient to infer that nicotine adversely affects maternal and fetal health during pregnancy, contributing to multiple adverse outcomes such as preterm delivery and stillbirth.
5. The evidence is suggestive that nicotine exposure during adolescence, a critical window for brain development, may have lasting adverse consequences for brain development.
6. The evidence is inadequate to infer the presence or absence of a causal relationship between exposure to nicotine and risk for cancer.

### Chapter 6: Cancer

#### Lung Cancer

1. The evidence is sufficient to conclude that the risk of developing adenocarcinoma of the lung from cigarette smoking has increased since the 1960s.
2. The evidence is sufficient to conclude that the increased risk of adenocarcinoma of the lung in smokers results from changes in the design and composition of cigarettes since the 1950s.

3. The evidence is not sufficient to specify which design changes are responsible for the increased risk of adenocarcinoma, but there is suggestive evidence that ventilated filters and increased levels of tobacco-specific nitrosamines have played a role.
4. The evidence shows that the decline of squamous cell carcinoma follows the trend of declining smoking prevalence.

#### Liver Cancer

1. The evidence is sufficient to infer a causal relationship between smoking and hepatocellular carcinoma.

#### Colorectal Cancer

1. The evidence is sufficient to infer a causal relationship between smoking and colorectal adenomatous polyps and colorectal cancer.

#### Prostate Cancer

1. The evidence is suggestive of no causal relationship between smoking and the risk of incident prostate cancer.
2. The evidence is suggestive of a higher risk of death from prostate cancer in smokers than in nonsmokers.
3. In men who have prostate cancer, the evidence is suggestive of a higher risk of advanced-stage disease and less-well-differentiated cancer in smokers than in nonsmokers, and—independent of stage and histologic grade—a higher risk of disease progression.

#### Breast Cancer

1. The evidence is sufficient to identify mechanisms by which cigarette smoking may cause breast cancer.
2. The evidence is suggestive but not sufficient to infer a causal relationship between tobacco smoke and breast cancer.
3. The evidence is suggestive but not sufficient to infer a causal relationship between active smoking and breast cancer.



4. The evidence is suggestive but not sufficient to infer a causal relationship between exposure to secondhand tobacco smoke and breast cancer.

#### **Adverse Health Outcomes in Cancer Patients and Survivors**

1. In cancer patients and survivors, the evidence is sufficient to infer a causal relationship between cigarette smoking and adverse health outcomes. Quitting smoking improves the prognosis of cancer patients.
2. In cancer patients and survivors, the evidence is sufficient to infer a causal relationship between cigarette smoking and increased all-cause mortality and cancer-specific mortality.
3. In cancer patients and survivors, the evidence is sufficient to infer a causal relationship between cigarette smoking and increased risk for second primary cancers known to be caused by cigarette smoking, such as lung cancer.
4. In cancer patients and survivors, the evidence is suggestive but not sufficient to infer a causal relationship between cigarette smoking and (1) the risk of recurrence, (2) poorer response to treatment, and (3) increased treatment-related toxicity.

## **Chapter 7: Respiratory Diseases**

### **Chronic Obstructive Pulmonary Disease**

1. The evidence is sufficient to infer that smoking is the dominant cause of chronic obstructive pulmonary disease (COPD) in men and women in the United States. Smoking causes all elements of the COPD phenotype, including emphysema and damage to the airways of the lung.
2. Chronic obstructive pulmonary disease (COPD) mortality has increased dramatically in men and women since the 1964 Surgeon General's report. The number of women dying from COPD now surpasses the number of men.
3. The evidence is suggestive but not sufficient to infer that women are more susceptible to develop severe chronic obstructive pulmonary disease at younger ages.

4. The evidence is sufficient to infer that severe  $\alpha$ 1-antitrypsin deficiency and cutis laxa are genetic causes of chronic obstructive pulmonary disease.

### **Asthma**

1. The evidence is suggestive but not sufficient to infer a causal relationship between active smoking and the incidence of asthma in adolescents.
2. The evidence is suggestive but not sufficient to infer a causal relationship between active smoking and exacerbation of asthma among children and adolescents.
3. The evidence is suggestive but not sufficient to infer a causal relationship between active smoking and the incidence of asthma in adults.
4. The evidence is sufficient to infer a causal relationship between active smoking and exacerbation of asthma in adults.

### **Tuberculosis**

1. The evidence is sufficient to infer a causal relationship between smoking and an increased risk of *Mycobacterium tuberculosis* disease.
2. The evidence is sufficient to infer a causal relationship between smoking and mortality due to tuberculosis.
3. The evidence is suggestive of a causal relationship between smoking and the risk of recurrent tuberculosis disease.
4. The evidence is inadequate to infer the presence or absence of a causal relationship between active smoking and the risk of tuberculosis infection.
5. The evidence is inadequate to infer the presence or absence of a causal relationship between exposure to secondhand smoke and the risk of tuberculosis infection.
6. The evidence is inadequate to infer the presence or absence of a causal relationship between exposure to secondhand smoke and the risk of tuberculosis disease.

### **Idiopathic Pulmonary Fibrosis**

1. The evidence is suggestive but not sufficient to infer a causal relationship between cigarette smoking and idiopathic pulmonary fibrosis.

## **Chapter 8: Cardiovascular Disease**

1. The evidence is sufficient to infer a causal relationship between exposure to secondhand smoke and increased risk of stroke.
2. The estimated increase in risk for stroke from exposure to secondhand smoke is about 20-30%.
3. The evidence is sufficient to infer a causal relationship between the implementation of a smokefree law or policy and a reduction in coronary events among people younger than 65 years of age.
4. The evidence is suggestive but not sufficient to infer a causal relationship between the implementation of a smokefree law or policy and a reduction in cerebrovascular events.
5. The evidence is suggestive but not sufficient to infer a causal relationship between the implementation of a smokefree law or policy and a reduction in other heart disease outcomes, including angina and out-of-hospital sudden coronary death.

## **Chapter 9: Reproductive Outcomes**

### **Congenital Malformations**

1. The evidence is sufficient to infer a causal relationship between maternal smoking in early pregnancy and orofacial clefts.
2. The evidence is suggestive but not sufficient to infer a causal relationship between maternal smoking in early pregnancy and clubfoot, gastroschisis, and atrial septal heart defects.

### **Neurobehavioral Disorders of Childhood**

1. The evidence is suggestive but not sufficient to infer a causal relationship between maternal prenatal smoking and disruptive behavioral disorders, and attention deficit hyperactivity disorder in particular, among children.

2. The evidence is insufficient to infer the presence or absence of a causal relationship between maternal prenatal smoking and anxiety and depression in children.
3. The evidence is insufficient to infer the presence or absence of a causal relationship between maternal prenatal smoking and Tourette syndrome.
4. The evidence is insufficient to infer the presence or absence of a causal relationship between maternal prenatal smoking and schizophrenia in her offspring.
5. The evidence is insufficient to infer the presence or absence of a causal relationship between maternal prenatal smoking and intellectual disability.

### **Ectopic Pregnancy**

1. The evidence is sufficient to infer a causal relationship between maternal active smoking and ectopic pregnancy.

### **Spontaneous Abortion**

1. The evidence is suggestive but not sufficient to infer a causal relationship between maternal active smoking and spontaneous abortion.

### **Male Sexual Function**

1. The evidence is sufficient to infer a causal relationship between smoking and erectile dysfunction.

## **Chapter 10: Other Specific Outcomes**

### **Eye Disease: Age-Related Macular Degeneration**

1. The evidence is sufficient to infer a causal relationship between cigarette smoking and neovascular and atrophic forms of age-related macular degeneration.
2. The evidence is suggestive but not sufficient to infer that smoking cessation reduces the risk of advanced age-related macular degeneration.

### **Dental Disease**

1. The evidence is suggestive but not sufficient to infer a causal relationship between active cigarette smoking and dental caries.

2. The evidence is suggestive but not sufficient to infer a causal relationship between exposure to tobacco smoke and dental caries in children.
3. The evidence is suggestive but not sufficient to infer a causal relationship between cigarette smoking and failure of dental implants.

### **Diabetes**

1. The evidence is sufficient to infer that cigarette smoking is a cause of diabetes.
2. The risk of developing diabetes is 30–40% higher for active smokers than nonsmokers.
3. There is a positive dose-response relationship between the number of cigarettes smoked and the risk of developing diabetes.

### **Immune Function and Autoimmune Disease**

1. The evidence is sufficient to infer that components of cigarette smoke impact components of the immune system. Some of these effects are immune activating and others are immune-suppressive.
2. The evidence is sufficient to infer that cigarette smoking compromises the immune system and that altered immunity is associated with increased risk for pulmonary infections.
3. The evidence is sufficient to infer that cigarette smoke compromises immune homeostasis and that altered immunity is associated with an increased risk for several disorders with an underlying immune diathesis.

### **Rheumatoid Arthritis**

1. The evidence is sufficient to infer a causal relationship between cigarette smoking and rheumatoid arthritis.
2. The evidence is sufficient to infer that cigarette smoking reduces the effectiveness of the tumor necrosis factor-alpha (TNF- $\alpha$ ) inhibitors.

### **Systemic Lupus Erythematosus**

1. The evidence is inadequate to infer the presence or absence of a causal relationship between cigarette smoking and systemic lupus erythematosus (SLE), the severity of SLE, or the response to therapy for SLE.

### **Inflammatory Bowel Disease**

1. The evidence is suggestive but not sufficient to infer a causal relationship between cigarette smoking and Crohn's disease.
2. The evidence is suggestive but not sufficient to infer a causal relationship between cigarette smoking and a protective effect for ulcerative colitis.

## **Chapter 11: General Morbidity and All-Cause Mortality**

1. The evidence is sufficient to infer a causal relationship between smoking and diminished overall health. Manifestations of diminished overall health among smokers include self-reported poor health, increased absenteeism from work, and increased health care utilization and cost.
2. The evidence is sufficient to infer that cigarette smoking increases risk for all-cause mortality in men and women.
3. The evidence is sufficient to infer that the relative risk of dying from cigarette smoking has increased over the last 50 years in men and women in the United States.

## **Chapter 12: Smoking-Attributable Morbidity, Mortality, and Economic Costs**

1. Since the first Surgeon General's report on smoking and health in 1964, there have been more than 20 million premature deaths attributable to smoking and exposure to secondhand smoke. Smoking remains the leading preventable cause of premature death in the United States.
2. Despite declines in the prevalence of current smoking, the annual burden of smoking-attributable mortality in the United States has remained above 400,000 for more than a decade and currently is estimated to be about 480,000, with millions more living with smoking-related diseases.

3. Due to the slow decline in the prevalence of current smoking, the annual burden of smoking-attributable mortality can be expected to remain at high levels for decades into the future, with 5.6 million youth currently 0 to 17 years of age projected to die prematurely from a smoking-related illness.
4. Annual smoking-attributable economic costs in the United States estimated for the years 2009–2012 were between \$289–332.5 billion, including \$132.5–175.9 billion for direct medical care of adults, \$151 billion for lost productivity due to premature death estimated from 2005–2009, and \$5.6 billion (in 2006) for lost productivity due to exposure to secondhand smoke.

## **Chapter 13: Patterns of Tobacco Use Among U.S. Youth, Young Adults, and Adults**

1. In the United States, the prevalence of current cigarette smoking among adults has declined from 42% in 1965 to 18% in 2012.
2. The prevalence of current cigarette smoking declined first among men (between 1965 and the 1990s), and then among women (since the 1980s). However, declines in the prevalence of smoking among adults (18 years of age and older) have slowed in recent years.
3. Most first use of cigarettes occurs by 18 years of age (87%), with nearly all first use by 26 years of age (98%).
4. Very large disparities in tobacco use remain across racial/ethnic groups and between groups defined by educational level, socioeconomic status, and region.
5. In the United States, there are now more former smokers than there are current smokers. More than half of all ever smokers have quit smoking.
6. The rate of quitting smoking among recent birth cohorts has been increasing, and interest in quitting is high across all segments of society.
7. Patterns of tobacco use are changing, with more intermittent use of cigarettes and an increase in use of other products.

## **Chapter 14: Current Status of Tobacco Control**

1. The evidence is sufficient to conclude that there are diverse tobacco control measures of proven efficacy at the population and individual levels.
2. The evidence is sufficient to conclude that advertising and promotional activities by the tobacco companies cause the onset and continuation of smoking among adolescents and young adults.
3. Tobacco product regulation has the potential to contribute to public health through reductions in tobacco product addictiveness and harmfulness, and by preventing false or misleading claims by the tobacco industry of reduced risk.
4. The evidence is sufficient to conclude that litigation against tobacco companies has reduced tobacco use in the United States by leading to increased product prices, restrictions on marketing methods, and making available industry documents for scientific analysis and strategic awareness.
5. The evidence is sufficient to conclude that increases in the prices of tobacco products, including those resulting from excise tax increases, prevent initiation of tobacco use, promote cessation, and reduce the prevalence and intensity of tobacco use among youth and adults.
6. The evidence is sufficient to conclude that smokefree indoor air policies are effective in reducing exposure to secondhand smoke and lead to less smoking among covered individuals.
7. The evidence is sufficient to conclude that mass media campaigns, comprehensive community programs, and comprehensive statewide tobacco control programs prevent initiation of tobacco use and reduce the prevalence of tobacco use among youth and adults.
8. The evidence is sufficient to conclude that tobacco cessation treatments are effective across a wide population of smokers, including those with significant mental and physical comorbidity.

## **Chapter 15: The Changing Landscape of Tobacco Control—Current Status and Future Directions**

1. Together, experience since 1964 and results from models exploring future scenarios of tobacco control indicate that the decline in tobacco use over coming decades will not be sufficiently rapid to meet targets. The goal of ending the tragic burden of avoidable disease and premature death will not be met quickly enough without additional action.
2. Evidence-based tobacco control interventions that are effective continue to be underutilized and implemented at far below funding levels recommended

by the Centers for Disease Control and Prevention. Implementing tobacco control policies and programs as recommended by *Ending the Tobacco Epidemic: A Tobacco Control Strategic Plan* by the U.S. Department of Health and Human Services and the *Ending the Tobacco Problem: A Blueprint for the Nation* by the Institute of Medicine on a sustained basis at high intensity would accelerate the decline of tobacco use in youth and adults, and also accelerate progress toward the goal of ending the tobacco epidemic.

3. New “end game” strategies have been proposed with the goal of eliminating tobacco smoking. Some of these strategies may prove useful for the United States, particularly reduction of the nicotine content of tobacco products and greater restrictions on sales (including bans on entire categories of tobacco products).

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